

REMARKS

The Final Office Action mailed July 28, 2006, the Advisory Action mailed November 11, 2006, and the Office Action mailed April 19, 2007 have been studied in detail along with the references applied and cited by the Examiner.

In response to the Office Actions, Applicant canceled claims 14, 36, 37 and 69, amended claims 1, 3-7, 9, 11-13, 32-35 and 64-68, and added new claim 70. Applicant submits that all of the pending claims read on the elected species.

THE SECTION 112 REJECTION

Claims 1, 3-7, 9, 11-14, 32-40 and 64-68 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has amended independent claims 1, 9, 32 and 64 to include structure and to provide objective criteria to determine permanent plastic deformation of the ring. Applicant submits that the remaining dependent claims, dependent on one of the above referenced independent claims, are definite.

Applicant submits that all of the pending claims are in proper form pursuant to 35 USC §112.

THE SECTION 103 REJECTIONS

Claims 1, 4, 6, 7, 9, 12, 14, 32, 34, 36, 64, 66, 68 and 69 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gerwien et al. (DE 10061709) in view of Euler (US 4364615).

Claims 38-40 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gerwien et al. (DE 10061709) in view of Euler (US 4364615) as applied to claim 32 above, and further in view of Perrow (US 6390925).

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Gerwien et al. (DE 10061709) in view of Euler (US 4364615) as applied to claim 9 above, and further in view of Draving (US 2275058).

Claims 5, 35 and 67 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gerwien et al. (DE 10061709) in view of Euler (US 4364615) as applied to claims 1 and 32 above, and further in view of McCarrick et al. (US 5713692).

Claims 3, 13, 33, 37 and 65 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gerwien et al. (DE 10061709) in view of Euler (US 4364615) as applied to claims 1, 13, 32, and 37 above, and further in view of either Bross (US 2975667) or Turbant et al. (FR 2821906).

Gerwien et al. and Euler are the two primary references cited by the Examiner as support for the rejection of the claims.

Gerwien et al. describes a fastening device for a bearing of a spindle wherein the spring characteristic of the spring nut element required to hold and to adjust the bearing of the spindle is based on the shape and/or the elastic deformability of the spring nut element. The spring nut element fastened to the spindle produces a predetermined elastic force, so that the bearing of the spindle can be adjusted without play. According to the invention, tabs are provided to lock the inner ring-shaped disk section of the spring nut element to the spindle. These tabs are bent elastically to engage them in the thread of the spindle, and the resulting elastic force keeps them locked in position, so that the spring nut element cannot work itself loose. Further, as shown in Figure 2, the outer ring-shaped disk section (2) and the inner ring-shaped disk section (3) form a predetermined angle with each other. This angle can be changed elastically by the application of an external force.

The locking ring of Gerwien et al. is designed to be screwed onto a thread and is elastically deformable. Contradistinctively, the engagement zone of the closed locking ring according to the

enclosed independent claims is not elastically, but permanently plastically deformed into an angle toward the axis of the locking ring. Such a permanent plastic deformation is not possible with the ring of Gerwien et al., because the ring of Gerwien et al. is designed to maintain elasticity also in the installed state.

The Examiner next cited Euler to show the use of a closed outer edge. However, similar to Gerwien et al., Euler describes a retaining ring (30) including a cone-shaped, resilient rim (32) which defines a Belleville type spring. “The invention as claimed is intended to avoid the shortcomings of prior retaining rings by providing a retaining ring having a cone-shaped resilient rim. A plurality of resilient teeth extends radially from the rim” (refer to column 1, lines 37-40, and claims 1-3). Euler describes the advantages of its retaining ring as providing a substantially continuous circumferential contact with the shaft or housing and with the bearing; “the Belleville-type spring defined by the resilient rim of the retaining ring provides an inherently high spring rate” (column 1, lines 51-56).

Combining Gerwien et al. with Euler, and with any other of the cited references, would not result in a locking ring wherein said locking ring includes a) an outer closed circumferentially continuous edge zone which i) slants at a first angle relative to a plane that is normal to the axis of said locking ring in a state prior to installation and ii) slants at a second angle to said plane in an installed state, b) a radially inner circumferentially interrupted engagement zone which i) slants at a first angle relative to said plane that is normal to the axis of said locking ring in the state prior to installation and ii) slants at a second angle to said plane in the installed state, c) said first angle of said outer closed edge zone being substantially the same as said first angle of said radially inner circumferentially interrupted engagement zone in the state prior to installation, and d) said second angle of said outer closed edge zone being different from said second angle of said radially inner

circumferentially interrupted engagement zone in the installed state.

Independent claims 1, 9, 32, 64, and 70 all require that in the installed state, the radially inner zone of the locking ring is permanently plastically deformed. This feature is not anticipated nor made obvious by Gerwien et al. or Euler, either singly or in combination with one another.

Further, independent claims 9, 32 and 64 require the locking ring having a first diameter in a state prior to installation, and a second diameter in an installed state such that the first diameter is different from said second diameter, and wherein in the installed state the radially inner zone is axially and radially permanently plastically deformed and thereby adjusts to said locking groove. The remaining dependent claims add further elements that distinguish the locking ring from the cited references. Thus, independent claims 1, 9, 32, and 64, and all claims dependent therefrom, are allowable over this record art.

Gerwien et al. and Euler do not anticipate nor make obvious, either singly or in combination, Applicant's claims as described above. Applicants accordingly request reconsideration and allowance thereof. Applicant's attorney can be reached at the telephone number below if any further information is needed.

Respectfully submitted,
FAY SHARPE LLP

By:

BRIAN E. TURUNG

Reg. No. 35,394

1100 Superior Avenue, 7th Floor

Cleveland, Ohio 44114-2579

Telephone: (216) 861-5582

Facsimile: (216) 241-1666

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Adeline Machado
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